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AgRISTARS

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Supporting Research

A Joint Program for Agriculture and Resources Inventory Surveys Through Aerospace Remote Sensing

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TECHNICAL REPORT

COMPOSITION AND ASSEMBLY OF A SPECTRAL DATA BASE FOR TRANSITION YEAR SPRING WHEAT BLIND SITES

Volume I

M. H. Trenchard, M. L. Sestak, and M. C. Kinsler



NASA







### TECHNICAL REPORT

# COMPOSITION AND ASSEMBLY OF A SPECTRAL DATA BASE FOR TRANSITION YEAR SPRING WHEAT BLIND SITES

Volume I

Job Order 73-312

This report describes Vegetation/Soils/Field Research activities of the Supporting Research project of the AgRISTARS program.

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Development and Evaluation Department

LOCKHEED ENGINEERING AND MANAGEMENT SERVICES, INC.
Under Contract NAS 9-15800

For

Earth Observations Division

Space and Life Science's Directorate

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
HOUSTON TEXAS

January 1980

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#### 1. INTRODUCTION

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In 1979, Land Satellite (Landsat) spectral data, meteorological data, and ground-truth observation data for the Large Area Crop Inventory Experiment (LACIE) intensive test site (ITS) segments were compiled into a data base available to the users at the Laboratory for Applications of Remote Sensing (LARS) at Purdue University. The effort to provide a comprehensive research data base for the development of hybrid spectral meteorological crop calendar and yield models is continuing in support of the Agriculture and Resources Inventory Surveys Through Remote Sensing (AgRISTARS) program within the Earth Observations Division, Space and Life Sciences Directorate at the Lyndon B. Johnson Space Center, National Aeronautics and Space Administration.

The spectral data for 35 LACIE Transition Year (TY) 1978 spring wheat blind site segments and the corresponding ground-truth data were processed and compiled in a single data set that complements the ITS data base. (See table 1-1). The ground truth includes periodic observations of crop development, plant height, and percentage of ground cover as well as ancillary information on cropping practices and final yield estimates. Meteorological data for the 1978 spring wheat data are not available at this time.

This document describes the assembly of the spectral and ground-truth data components of the TY spring wheat data set.

Trenchard, M. H.; Sestak, M. L.; Kinsler, M. C.; and Phinney, D. E.: Composition and Assembly of a Spectral-Met Data Base for Spring and Winter Wheat. LEC-13393 (JSC-14901), Vol. I, May 1979; Vol. II, June 1979.

TABLE 1-1. TY SPRING WHEAT SEGMENTS

Segment	County	State	No. of acquisitions	No. of fields
1387	Ramsey	M. Dak.	6	15
1392	Benson	N. Dak.	5	15
1394	Burke	N. Dak.	13	12
1457	Ward	N. Dak.	- 6	15
1461	Pierce	N. Dak.	13	14
1467	Towner	N. Dak.	11	10
1472	Barnes	N. Dak.	6	12
1473	Cass	N. Dak.	7	13
1485	Dewey	S. Dak.	9	15
1518	Roseau	Minn.	9	15
1537	McCone	Mont.	10	5
1542	Roosevelt	Mont.	8	15
1544	Sheridan	Mont.	. 9	15
1553	Carter	Mont.	10	4
1566	Grant	Minn.	5	15
1584	Pembina	N. Dak.	6	15
1599	Edmunds	S. Dak.	6	14
1612	McHenry	N. Dak.	6	15
1619	Grand Forks	N. Dak.	7	15
1636	Stutsman	N. Dak.	11	15
1653	Burleigh	N. Dak.	12	15
1656	Morton	N. Dak.	7	15
1658	Dickey	N. Dak.	6	15
1664	Sargent	N. Dak.	10	15
1668	Perkins	S. Dak.	7	15
1676	Brule	S. Dak.	12	1
1755	Jerauld	S. Dak.	15	12
1811	Kingsbury	S. Dak.	12	15
1825	Norman	Minn.	11	15
1842	Yellow Medicine	Minn.	9	15
1909	Kidder	N. Dak.	5	15
1918	Grant	N. Dak.	5	15
1920	Sioux	N. Dak.	9	11
1924	La Moure	N. Dak.	12	111
1942	Richland	Mont.	8	7

#### 2. COMPILATION PROCEDURE

Of the original 71 blind sites, 35 sites selected for the data base met the following criteria:

- 1. Existence of spring wheat observation fields in the segment.
- 2. Availability of 18-day ground-truth observations.
- Observation field delineations available from the LACIE Accuracy Assessment system.
- 4. Completeness of the Landsat acquisition history.

The field delineations for each segment were coded, punched on cards, and transmitted to the LARS computer for temporary disk storage.

Landsat image unload tapes containing the spectral lata were created at the Johnson Space Center and transmitted to LARS tapes. Satellite details listed by segment number and acquisition dates appear in table 2-1.

Software was developed to create the four-channel spectral data base. The software utilizes the observation field delineation data and the image tapes to compute the spectral four-channel means and standard deviations for each field and each acquisition of every segment selected. Unlike the software developed for LARSYS P1, which performed similar computations, the new software punches the data on cards in a predetermined format. The majority of the runs were made through the night batch machine. The new software proved to be highly compatible with this mode of operation. The format for the spectral data appears in table 2-2.

The corresponding ground-truth periodic observations were extracted from a tape compiled by Accuracy Assessment personnel. The tape included periodic observations for all wheat blind sites during TY. The format for these data appears in table 2-3.

TABLE 2-1.— SATELLITE DETAILS BY SEGMENT NUMBER AND ACQUISITION DATE

Segment	Acquisition date	Satellite	Sun angle	Segment	Acquisition date	Satellite	Sun angle	Segment	Acquisition date	Satellite	Sun angle
1387	8135	2	50	1461	8209	2	49	1537	8122	2	48
	8136	2	50		8217	3	50		8141	2	52
	8154	2	53		8218	3	50		8159	2	54
	8216	3	51		8236	3	45		8194	2	52
	5252	3	41		8263	2	36		8195	2	52
	8270*	3	35	1467	8736	2	50		8213	2	49
1392	8136	2	51		8137	2	51		8221	3	50
	8154	2	53		8154	2	53		8222	3	50
	8190	2	53		8155	2	53		8231*	2	45
	8208	2	50		8190	2	52		8266	2	36
ı	8217*	3	51		8191	2	52	1542	8122	2	47
1394	8120	2	47		8199	3	54		8141	2	51
1370	8156	2	53		8200	3	54		8159	2	53
	8174*	-	53		8208	2	50	İ	8176	2	53
	8175	2	53		8217	3	50		8194*	2	52
	8211	2	49		8218*	3	50	]	8222	3	42
	8219	3	50	1472	8117	2	46		8231	2	45
	8220	3	50		8135	2	51		8258	3	39
	8228	2	46		8216	3	51	1544	8104	2	42
	8238	3	45		8243*	2	42		8122	2	47
	8246	2	41		8252	3	43		8140	2	51
	8247	2	40		8270	3	36		8158	2	53
	8264	, 2	35	1473	8116	2	46	1	8176	2	53
	8273	3	34		8197	3	55		8221	3	49
1457	8156	2	53	1	8207	2	50		8230*	2	45
1437	8174*	1	53		8224		47		8239	3	45
	8228	2	46		8242	2	43		8266	2	35
	8246	2	41		8251	3	42	1553	8103	2	43
1	8264	2	35		8269	3	36	1	8122	2	48
	8273	3	34	1518	8116	2	45	1	8140	2	52
1461	8118	2	46	1 '''	8135	2	50	1	8193	2	53
1-01	1	1 -			6153	1	53		8194	2	53
	8136	2	50		8188	2	52		8203	3	54
	8154	2	53		8206	2	50		8211*	1	50
	8155	2	53		8224	2	46		8220	3	51
	3190	2	52		8243	١.	42		8247	2	42
	199	3	54		8251	3	41		8266	2	36
	1 7	. 2	50	1	8260	- 1	37	1566	8115	2	46

<sup>&</sup>quot;Indicates Accuracy Assessment's base date used for digitization.

TABLE 2-1.— Continued.

Segment	Acquisition date	Satellite	Sun angle	Segment	Acquisition date	Satellite	Sun angle	Segment	Acquisition date	Satellite	Sun angle
1566	8133	2	51	1636	8243	2	42	1668	8174	2	54
	8169*	2	54		8270	3	36		8219	3	51
	8195	3	56	1653	8101	2	41		8228	2	47
	8232	3	48	.000	8119	2	47		8246*	2	42
1584	8117	2	46		8136	2	51		8264	2	37
,	8135	2	50		8137	2	51		8273	3	36
	8153	2	53		8154	2	53	1676	8117	2	48
	8198	3	54		2155	2	54		8134	2	52
	8216	3	51		8190	2	53		8135	2	52
	8243*	2	42		8191*	2	53		8207	2	52
1599	8117	2	47		8199	3	54		6215	3	53
1223	8135	2	51		8208	2	50		8216	3	53
	8207*	2	51		8209	2	50		8224*	2	49
	8243	2	43		8217	3	51		8234	3	49
	8252	3	43	1656	8101	2	41		8242	2	45
	8270	3	37		8137	2	51		8243	2	44
	-	-			8155	2	54		8251	3	45
1612	8118	2	47 51		8191	2	53		8270	3	39
	8137	2	54	 	8209	2	50	1755	8117	2	48
	8155	3	54		8218	3	52		8134	2	52
	8199 8218	3	51		82632	2	36		8135	2	52
	8236*		46	1658	8117	2	47	1	8153	2	54
	<del> </del>	╄	┿	1	8135	2	51		8197	3	56
1619	8135	2	50		8207	2	51		8198	3	56
	8198	3	54		8243	2	43		8207*	2	51
	8207*		50		8252	3	43		8215	3	53
	8216	3	51		8270	3	37		8216	3	53
	8243	3	42	1664	8117	2	47	1	8225	2	48
	8252	3	35	1004	8134	2	51		8234	3 2	44
	82/0	+-	<del></del>	4	8135	2	51		8243	3	44
1636	8117	2	46		8206	2	51		8251	3	43
	8135	2	51		8233	3	48		8270	3	38
	8154	2	1		8242	1	43		<del>├</del>	+-	+-
	8190	2	1		8243		43	1811	8115	2	47
	8207	1	1		8251	3	43		8133	2	52
	8208	2	l l		8269	1 3	37		8134	ı	52
1	8216	3	1		8270	i	37		8197	3	56
1	8217 8226	3 2	1	1668	8156	2	54	1	8215	3	53

<sup>&</sup>quot;Indicates Accuracy Assessment's base date used for digitization.

TABLE 2-1.— Concluded.

		_	T				_
Segment	Acquisition date	Satellite	Sen angle	), comment	Acquisition date	Satellite	Sun angle
1811	0224	5	48	1920	8136	2	52
	8232	3	49		8137	2	52
	8233	3	49		8199	3	55
	8250	3	44		8209*	2	51
	8251	3	44	ŀ	8217	3	52
	8268	3	39		8218	3	52
	8269	3	38		8236	3	47
1825	8097	2	40		8271	3	37
	8133	2	50	1924	8135	2	51
	8169	2	54		8136	2	51
	8196	3	55		8154	2	54
1	8206*	2	51		8198	3	55
	8223	2	47		8207	2	51
	8224	2	47		8208*	2	50
	8232	3	47		8216	3	52
	8242	ê	43	:	8217	3	52
	8250	3	42		8226	2	47
	8251	3	42		8243	2	43
1842	6133	2	52		8252	3	43
	8196	3	56		8270	3	37
	8205*	2	52	1942	8104	2	42
	8223	2	48		8122	2	48
	8241	2	44		8176	2	54
1	8249	3	44		8194	2	52
	8258	2	40		8221	3	50
	8267	3	39		8230	2	46
	8268	3	39		8248	2	41
1909	8136	2	51		8266*	2	36
	8154	2	53	1485	8101	2	42
	8190	2	53		8137	2	52
	8206	2	50		8154	2	54
	8217*	3	51		8199	3	35
1918	8137	2	52		8208	3	51
	8209	2	51		8217	3	52
<u> </u>	8218	3	52		8218	3	52
	8236*	3	47		8236	3	47
	8263	2	37		8263	2	37
1920	8101	2	42				

<sup>&</sup>quot;Indicates Accuracy Assessment's base date used for digitization.

TABLE 2-2.— FORMAT OF SPECTRAL DATA BASE

(a) Card image types

T	yp <del>s</del>	Definition								
Se	gment	Contains segment statistics only								
Fi	eld	Contains individual field statis- tics and segment means								

Column numbers	numbers Definition						
1 through 4	Segment number	14					
5 through 8	Acquisition date (Julian)	14					
9	First digit of segment number or code for crop type of field	A2					
10 through 12	Last three digits of segment number of three-digit field number	12					
13 through 18	Channel 1 mean of segment or field	F6.2					
19 through 24	Channel 2 mean of segment or field	F6.2					
25 through 30	Channel 3 mean of segment or field	F6.2					
31 through 36	Channel 4 mean of segment or field	F6.2					
37 through 41	Channel 1 standard deviation of segment or field	F5.2					
42 through 46	Channel 2 standard deviation of segment or field	F5.2					
47 through 51	Channel 3 standard deviation of segment or field	F5.2					
52 through 56	Channel 4 standard deviation of segment or field	F5.2					
57 th <del>ro</del> ugh 62	Channel 1 mean of segment only	F6.2					
63 through 68	Channel 2 mean of segment only	F6.2					
69 through 74	Channel 3 mean of segment only	F6.2					
75 through 80	Channel 4 mean of segment only	F6.2					

TABLE 2-3.- FORMAT OF TY PERIODIC OBSERVATIONS DATA BASE

Column	Definition
1 through 4	Four-digit segment number
6 through 10	Date of satellite pass
12 and 13	Field number
15	Crop type (S, spring wheat; W, winter wheat; M, mixed wheat; O, oats; R, rye; B, barley)
17 and 18	Plant height (in inches)
20	Percentage of ground cover code (1 = 0 to 19%); (2 = 20 to 39%); (3 = 40 to 59%); (4 = 60 to 79%); (5 = 80 to 100%)
22 through 25	Feekes growth stage code
27 and 28	Drill spacing in inches (first acquisition only)
30 and 31	Yield (in bushels) for last acquisition only
33	Code A, abandoned; H, harvested; N, not planted as required
36 through 80	Additional comments

A flagging system was developed to warn users of potential data problems. Each Landsat acquisition date was quality checked and flagged accordingly for clouds/shadows, haze, delineation errors, narrow fields, and misregistration. This was accomplished by visual screening of the production film converter (PFC) Product 1. The format of these data appears in table 2-4. The flag codes are: C for clouds and or shadow, H for haze, S for narrow fields, P for delineation problems, and R for misregistration. It is the users' responsibility to ascertain whether or not the flagged problem will affect the intended use of the spectral data.

TABLE 2-4. — FORMAT OF TY SPRING WHEAT FLAGS DATA BASE

Co1 umn	Item								
1 through 4	Segment number								
5 through 8	Acquisition date								
10	Flag code for the first field in the segment								
12	Flag code for the second field in the segment								
14	Flag code for the third field in the segment								
16	Flag code for the fourth field in the segment								
18	Flag code for the fifth field in the segment								
•									
•	,								
•	Flag code for the nth field in the segment								

The components of the data base, spectral data and ground truth, were assembled as two separate files on a single library tape, LARS 5147. The format of this tape is described in table 2-5. A dump of the contents of these files is found in appendixes A, B, and C.

TABLE 2-5.— DATA BASE COMPONENTS ON LARS TAPE 5147
[Two files in conversational monitor system format]

File	Name	Туре	Card images
1	TYSW	SPECTRAL	4185
2	TYSW	PERIOBS	3252
3	TYSW	FLAGS	192

APPENDIX A
SPECTRAL DATA BASE

. 756	31661446 4	•						
1133878113355555555555555555555555555555	184010124875898333091666130056154884787739659760314446498487517517588887617517588887617517588887617517588887617517588887617517588887617517588887617517588888761757786877588888761757868775888887675778687757868775786877786877878888877868778788888778687878888878887887	9.84.50.3.4.6.3.6.3.6.3.6.3.6.3.6.3.6.3.6.3.6.3	\(\frac{\partial}{\partial}\) \(\fra	1243546416122132176952057797549629763369997924602392975625147936658493653780075311735742544965257797549629760336676728367371062903087465242538493653737366476693849365373737564257737564257737564257737564257737564257737564257737564257737564277375642773756427737564277375642773756427737564277375642773756427737564277375642776737676427767642776764277676427767642776764277667766	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	POSTONIO DE SA	######################################	REGREGATION OF THE TANKEN ON THE TANKEN OF T

FILE: TYSH

SPECTRAL A

CONVERSATIONAL MONITUR SYSTEM

77000000000000000000000000000000000000	7857-18-17-14-18-18-18-18-18-18-18-18-18-18-18-18-18-	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	11111111111111111111111111111111111111	######################################	\$100+65933-193X-1989;5435X5997660029642X4590447190777386655755-12739643046205 6************************************	######################################	60000000000000000000000000000000000000	NAMUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNUNU	CONTRACTOR

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SPECTRAL A

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139481755021 17.91 139481755023 22.62 139481755023 22.62 139481755024 21.57 139481755025 22.57 139481755026 22.57 139481755028 22.57 139481755028 22.57 139481755028 22.57 139481755028 22.57 139481755028 22.57 139481755028 12.57 139481755029 12.57 139482115022 17.57 139482115023 19.56 139482115023 19.56 139482115023 19.56 139482115024 19.56 139482115024 19.56 139482115024 19.56 139482115025 18.56	32.43.34.43.44.43.	11.7.9.9 11.7.9 11.9 11.9	4.0413.49 17.4810.42 5.27 3.20 4.31 7.79 4.38 4.05 2.59 5.26 4.31 5.23 2.59 5.26 4.31 3.89 4.31 3.89 5.26 7.6710.86 4.31 3.89 5.26 7.6710.86 4.31 3.89 5.26 7.6710.86	2.02 25.40	44444444444444444444444444444444444444	40.86 17.63 40.86 17.63 40.86 17.63

1906   1907
139482475020 22.00 25.00 30.53 12.54 1.47 2.33 2.56 1.03 24.80 25.79 36.73 15.91 139482475023 20.47 25.21 27.56 12.37 0.40 1.27 1.34 0.68 24.80 26.79 36.73 15.91 139482475024 22.72 27.19 28.86 12.02 2.70 6.12 8.15 3.25 24.80 28.74 36.73 15.91 139482475024 22.72 27.19 28.86 12.02 2.70 6.12 8.15 3.25 24.80 28.74 36.73 15.91 139482475025 27.21 34.36 44.27 18.23 2.60 -0.08 6.0 2.70 24.80 28.79 36.93 15.91 139482475025 27.21 34.36 44.27 18.89 5.10 9.43 7.57 2.47 24.80 28.79 36.93 15.91 139482475026 20.74 22.78 31.58 13.50 1.76 3.87 2.67 1.34 24.80 28.79 36.93 15.91

FILE: TYSW SPECTHAL A

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145782285029 2: 145782285023 2: 145782285013 2: 145782285013 2: 145782285020 2: 145782285020 2: 145782285016 1: 145782285016 1: 145782861457 2:	0.31 22.32 45.0 0.22 20.18 47.1 2.83 28.49 45.0 1.89 20.83 40.1 1.43 24.24 47.0	7 22.35 1.65 3 22.97 1.66 3 20.60 1.93 3 21.94 1.52 1 23.13 2.77 1 24.24 1.71	7.424 7.424		22.75 41.26	7.63 7.63

FILE: TYSW

SPECTRAL A

FILE: TYS#

SPECTRAL A

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FILE: TYSW	SPECTHAL A	•	CONVERSATIONAL	MONITOR SYSTEM
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153782225023 153782225020 153782225029 153782225029 153782311537 153782315020 153782315020 153782315020 153782315020	28.19 28.79 28.13 28.23 31.20 36.76 32.57 24.31	34.25 33.60 31.72 25.90 31.90 51.40 45.10	42.88 30.30 37.37 44.30 40.77 647.51	19.64 16.87 17.67 121.83 19.84 20.92	1.95	3.14 3.37 4.96 9.93 4.96 9.76 100 100 100 100 100 100 100 100 100 10	3.847 3.554 3.541 21.21 23.54 24.99 23.57 23.57	1.80 1.84 2.33 3.24 1.50	27.15 27.15 27.15 27.15 27.15 27.15 31.20 31.20	29.30 29.30 29.30 29.30 29.30 37.06 37.06	38.90 38.90 38.90 38.90 46.97 46.97	17.99 17.99 17.99 17.99 17.99 19.82 19.82
153742315027 153742565020 153742565020 153742565020 153742665027 153742665027 153742665027 154241225027 154241225027	34.76 24.14 31.13 31.54 31.23 30.77 28.22 31.41	45.10 25.13 27.17 27.16	56.29 31.03 35.18 40.17 41.34 41.49 57.17	24.95 14.95 14.34 15.00 15.26 14.26 14.41	3.76 76 76 76 76 76 76 76 76 76 76 76 76 7	5.72 7.77 4.90 4.27 3.14 5.68 4.90 1.83 2.73	7.10	1.50	31.20 24.18 24.18 24.18 24.18 30.77 30.77	37.06	31.83	19.85555555122.9558888888888888888888888888888888888
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154241415023 154241415023 154241415019 154241415016 154241415021 154241415021 154241415017 154241515417 154241541527	31.08 33.78 33.78 34.49 40.33 36.48 36.48 36.48	33.46 33.52 33.52 34.52 44.74 44.00 33.50	38.50 44.57 47.03 40.43 53.30 50.21 47.57 545.30	15.8H 17.7H 18.7H 18.6H 19.09 19.4H 19.4H 19.4H 19.4H 19.4H	200048 50048 5007 5007 5007 5007 5007 5007 5007 500	4.22dd 8.75dd 9.76d 8.75d 9.76d 9.76	3.37 3.54 3.57 2.00 4.32 4.32 3.41 3.41	1.15535 1.35535 1.3502	22222222222222222222222222222222222222	31.57 31.57 31.57 31.57 31.57 31.57	40.68 40.68 40.68 40.68 40.68 40.68 40.68	10000000000000000000000000000000000000
1542H1595026 1542R1595029 1542R1595029 1542R1595030 1542R1595025 1542R1595025 1542R1595023 1542R1595023 1542R1595023	33.52 44.02 39.50 40.40 33.60 43.65 40.63	50 46 35 71 443 46 43 50 443 46 43 60 443 60 444 60 445 60 44	55.41 43.11 54.88 55.35	21.41 17.18 23.03 21.75 21.75 21.46 22.04 22.13	4.19 5.9641 5.17 5.9641 5.17 5.967 5.851	4.53 4.82 7.73 17.	4.94 7.45 7.45 7.45 7.72 9.30 4.30 6.30	1.25	33.81	33.53	51.10	21.01
154281595018 154281595021 154281595012 154281595017 154281761542 154281765025 154281765025 154281765029 154281765028	44 · 20 47 · 37 42 · 76 30 · 20 35 · 44 20 · 02 36 · 02 34 · 27	47.69 381.84 381.84 552.73 39.43 41.86 41.86 41.86 41.86 41.86	64.01 64.01 56.057 550.57 550.57 550.57 550.57	20.19 24.00 24.00 22.72 21.00 21.00 21.00 22.00 21.00	4.5dy 5.3dy 5.3dy 5.3dy 6.127	6.84 7.96 4.60 3.74 0.66 1.00 5.91 0.02 0.02 0.02 0.03	5.897	1.36	33.51	33.53 33.53 33.53 33.53 33.53 30.70 30.70 30.70	51.10 51.10 51.10 51.10 50.57 50.57 50.57	21.01
154241755025 154241755025 154241765023 154241765020 154241765022 154241765022 154241765019 154241765014	32.10 27.20 29.33 37.78 38.12 40.57 35.67	32.20 29.17 43.74 42.43 47.74 34.30	50.10 51.10 51.04 50.55 57.02 59.13 61.59	23.80 22.35 21.32 23.57 22.31 22.31 23.48	3.14 1.99 2.71 4.33 5.371 1.53 3.83	4.06 3.20 5.07 0.42 5.07	4.59	2.03 2.06 2.54 1.08 1.90 0.93	30.20 30.20 30.20 30.20 30.20 30.20 30.20	30.70 30.70 30.70 30.70 30.70 30.70 30.70	50.57 50.57 50.57 50.57 50.57 50.57	21.22

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155382035019 2	5.21 51.90	34.19 15.	47 1.51	2.43 3.33	1.97	33.09	20.20	35.99	16.80
155342111553 2	4.57 25.60	43.90 19.	56 3.02	4.81 8.09	4.34	24.57	25.50	43.90	19.00
155342115017 2	0.09 20.15	41.20 19.	25 1.30	1.71 3.08	1.00	24.27	3.00	44.90	14.00
155392115019 2	4.74 25.81	41.76 14.	34 1.97	2.85 4.42	2:21	24.57	25.00	43.70	14.06
1553A2115230 2	6.10 24.16	47.44 20.	57 6.29	2.75 2.43	1.17	24.51	25.00	43.90	19.00
155342205017	5.63 26.62	40.30 17	50 2.70	3.07 3.20	1.31	26.76	28.23	1.69	20.13
155382205025	6.87 29.86	45.04 22.	17 2.01	3.28 4.39	1.97	20.10	20.43	41.89	20.19
155342205019 2	9.34 30.27	44.00 21.	10 2.03	3.30 3.55	1.01	60.10	57.53	41.09	20.19
155392471553 2	5.02 33.90	45.66 19.	94 5.50	8.45 6.22	2.78	24.02	33.50	45.00	17.94
155392475017 2	9.37 38.86	47.00 20.	39 5.47	4.16 4.35	1.54	29.02	11.70	45.00	19.94
155 3A2475019 3	5.48 47.04	54.40 22.	39 11	6.47 5.55	1.91	24.02	33.40	45.66	19.94
155382475030 2	9.87 37.81	47.02 20.	13 4.21	3.41 3.31	1.23	34.05	33.40	45.00	19.94
155382565017 2	3.24 29.71	33.59 13.	97 2.26	3.68 2.43	1.49	22.23	20.07	34.71	15.05
155382665025 2	4.02 34.04	30.09 14.	70 1.95	5.40 5.63	1.10	55.54	25.07	34 - 71	15.05
155342655030 2	1.84 25.61	31.02 13.	57 1.47	2.04 2.30	1:05	22.23	25.01	3 . 71	15.05
156641151566 2	3.21 23.20	55.09 4.	99 4.15	6.49 4.34	4.03	23.21	23.20	24.04	9.99
156641155017	0.84 19.71	17.25	22 1-00	5.08 6.90	3:50	51.51	23.20	33.89	9.99
150691155022 2	4.02 25.45	25.55 11.	50 1.74	1.45 3.02	1.01	23.21	23.20	22.84	9.99
156681155018 2	2.63 23.07	23.03 9.	37 3.32	2.74 4.35	3.17	23.21	23.20	22.69	9.99
156681155021 3	0.19 34.58	35.70 15.	16 2.59	3.41 4.28	1.00	23.21	23.20	22.04	9.99
155041155019 2	1.24 19.00	17.95 7	37 3.53	3.39 4.20	1.05	43.41	23-20	55.89	3.32
156631155023 2	3.84 24.26	23.05	89 1.13	1.44 2.19	0.83	23.21	23.20	22.84	4.44
156691155027 3	0.56 13.38	10.85 7.	26 1.39	2.26 3.58	1.19	53.51	53.50	34.03	7.49
156591155028 2	3.40 24.15	25.42 11	46 3.04	4.94 A.15	3.50	23.21	23.20	22.83	9.99
155681155029 2	1.13 19.84	17.72 5.	00 2.73	4.95 6.54	2.73	53.51	23.20	55.84	9.99
155531155026 2	0.75 17.13	17:17 7:	61 2.04	3.97 5.09	2.15	53.51	23.20	22.07	9.99
156541331566 2	3.14 23.50	24.56 13.	06 4.40	6.5712.39	5.94	23.19	23.00	29.65	13.00
156691335017	1.44 22.22	22.70 10.	59 1.03	2.31 4.54	1.67	23.13	23.50	24.00	13.00
156681335022 2	5.45 27.95	32.41 14.	35 2.04	3.37 3.29	1.40	23.19	23.55	24.00	13.00
156641325018 2	6.42 17.03	13.17	12 6.06	2-57 0-84	3.07	23.19	23.50	24.00	13.00
150691335921 2	1.53 22.29	23.29 10.	93 4.14	2.75 3.51	1.39	23.14	23.50	24.60	13.56
156581335024	11.74 21.53	17.37	03 3.70	2.35 4.59	3.42	23.14	51.56	29.56	13.05
156481335023 2	2.87 24.08	28.37 13.	24 1.51	2.48 5.31	2.90	23.14	23.50	24.00	13.60
155591335027 1	9.77 14.87	19.35	37 1.48	2.44 4.83	1.97	53.19	33.56	24.00	13.00
156581335028 2	4.92 27.73	31.73 14.	36 2.19	2.72 4.53	2.17	23.19	23.56	64.00	13.06
156641335029 1	9.05 14.77	19.09 9.	25 6.83	3.77 6.40	11 . د	53.14	53.56	24.00	13.66
156641335026 2	0.78 20.78	22.50 10.	67 4.41	3.65 6.16	2.03	23:13	23.55	29.00	13.00
156671041500 2	2.17 17.91	45.27 23.	87 3.26	5.6414.49	10.55	22.17	17.71	+5.27	23.07
156681695017 2	1.70 14.70	07.41 14.	67 1.59	1.79 5.18	5.17	55.17	17.31	40.27	23.07
156681695022 2	3.23 16.59	71.91 35.	50 1.11	1.44 7.10	4.20	22.11	17.91	40.21	23.07
156691695018 2	1.47 14.47	70-33 33.	16 1.29	1.4111.67	7.05	35.17	17.31	45.27	23.87
156641645021 2	2.33 17.40	4H.16 23.	18 1.46	1.8512.41	5.47	22.17	17.91	40.21	23.81
156641695019 2	1.77 15.82	55.35 27.	29 1.40	1.91 8.04	4.00	33.17	17:31	48.27	23.07
156691695023 2	1.00 13.95	72.00 35.	u. 90	1.50 6.13	4.02	22.17	17.41	40.21	23.07
150691095037	2.23 15.72	73.54 27	18 1.55	2.0114.75	7.07	22.17	17:31	40.21	23.67
1566A169572A 2	2.12 15.83	74.19 39	54 1.40	3.04 7.42	4.76	22.17	17.91	40.27	23.87
156641695029 2	1.79 15.66	61.44	19 1.77	4.2015.05	5.57	52.17	17.91	40.47	51.87
156551695026 2	2.39 15.78	07.72 36	00 1.30	2.50 6.34	4.04	11.55	11.41	40.21	23.07
156501701566 1	9.90 14.04	43.00 23.	08 2.30	3.0410.00	9.65	19.70	14.04	41.00	23.08
156631465017	9.63 13.41	44.15 23	31 1.50	1.44 2.98	1.95	19.40	14.04	43.00	23.08
156681965022	0.32 15.32	44.27 23.	41 1.35	1.00 3.50	2.39	14.40	14.04	43.00	23.00
155681965020 1	7.02 1/-17	90.17 27	41 1.22	1.14 5.14	4.22	17.70	14.04	43.08	63.08
150001905021 2	0.84 14.96	45.04 63	91 1.62	2.11 2.03	6.10	14.45	14.04	43.00	23.00
156681965019 2	0.26 15.03	34.74 21.	32 1.75	1.50 4.40	6.45	14.40	14.04	43.00	23.00

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